

Heathkit®
Heathkit®

for the

AC CONDUCTOR
Model SK-209

595-3598-03

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The following telephone numbers are direct lines to the departments listed:

Kit orders and delivery information	616-982-3411
Credit	616-982-3551
Replacement Parts	616-982-3571

Technical Assistance Phone Numbers
(8:00 A.M. to 4:30 P.M. Eastern Time, Weekdays Only)

Education Products	616-982-3980
Amateur Radio	616-982-3296
Test Equipment, Weather Instruments,	
Clocks	616-982-3315
Television	616-982-3307
Home Products, Stereo, Security, Telephone,	
Marine, Automotive	616-982-3496
Computer — Hardware	616-982-3309

YOUR HEATHKIT 1 YEAR LIMITED WARRANTY

Consumer Protection Plan for Heathkit Consumer Products

Welcome to the Heath family. We believe you will enjoy assembling your kit and will be pleased with its performance. Please read this Consumer Protection Plan carefully. It is a "LIMITED WARRANTY" as defined in the U.S. Consumer Product Warranty and Federal Trade Commission Improvement Act. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Heath's Responsibility

PARTS — Replacements for factory defective parts will be supplied free for 1 year from date of purchase. Replacement parts are warranted for the remaining portion of the original warranty period. You can obtain warranty parts direct from Heath Company by writing or telephoning us at (616) 982-3571. And we will pay shipping charges to get those parts to you ... anywhere in the world.

SERVICE LABOR — For a period of 1 year from the date of purchase, any malfunction caused by defective parts or materials will be corrected at no charge to you. You must deliver the unit at your expense to the Heath factory, any Heath Zenith Computers and Electronics center (units of Veritechology Electronics Corporation), or any of our authorized overseas distributors.

TECHNICAL CONSULTATION — You will receive free consultation on any problem you might encounter in the assembly or use of our Heathkit product. Just drop us a line or give us a call. Sorry, we cannot accept collect calls.

NOT COVERED — The correction of assembly errors, adjustments, calibration, and damage due to misuse, abuse, or negligence are not covered by the warranty. Use of corrosive solder and/or the unauthorized modification of the product or of any furnished component will void this warranty in its entirety. This warranty does not include reimbursement for inconvenience, loss of use, customer assembly, set-up time, or unauthorized service.

This warranty covers only Heath products and is not extended to other equipment or components that a customer uses in conjunction with our products.

SUCH REPAIR AND REPLACEMENT SHALL BE THE SOLE REMEDY OF THE CUSTOMER AND THERE SHALL BE NO LIABILITY ON THE PART OF HEATH FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO ANY LOSS OF BUSINESS OR PROFITS, WHETHER OR NOT FORESEEABLE.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Owner's Responsibility

EFFECTIVE WARRANTY DATE — Warranty begins on the date of first consumer purchase. You must supply a copy of your proof of purchase when you request warranty service or parts.

ASSEMBLY — Before seeking warranty service, you should complete the assembly by carefully following the manual instructions. Heathkit service agencies cannot complete assembly and adjustments that are customer's responsibility.

ACCESSORY EQUIPMENT — Performance malfunctions involving other non-Heath accessory equipment (antennas, audio components, computer peripherals and software, etc.) are not covered by this warranty and are the owner's responsibility.

SHIPPING UNITS — Follow the packing instructions published in the assembly manuals. Damage due to inadequate packing cannot be repaired under warranty.

If you are not satisfied with our service (warranty or otherwise) or our products, write to our Director of Customer Service, Heath Company, Benton Harbor MI 49022. He will make certain your problems receive immediate, personal attention.

Heathkit® Manual

for the

AC CONDUCTOR

Model SK-209

595-3598-03

HEATH COMPANY
BENTON HARBOR, MICHIGAN 49022

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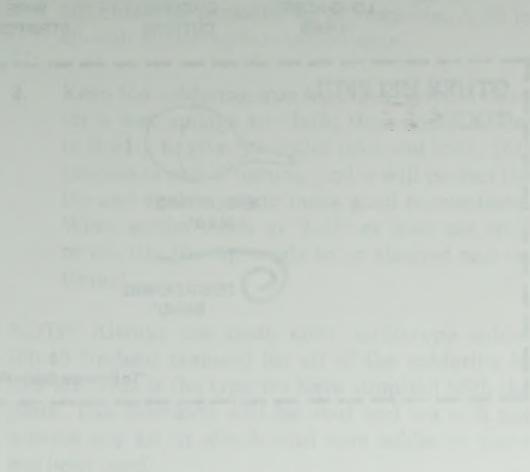
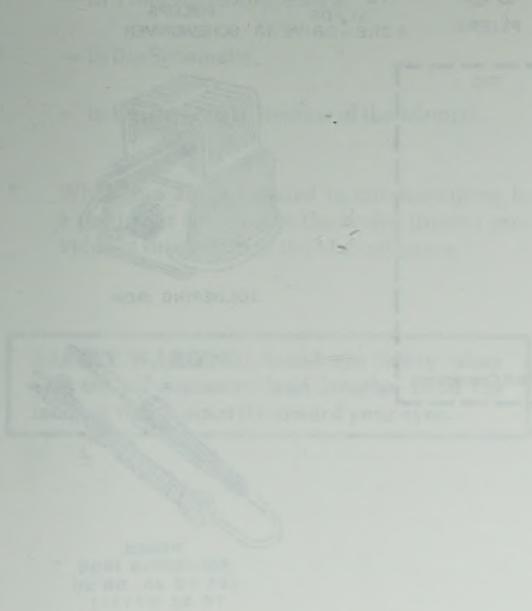
INTRODUCTION

Your Heathkit Model SK-209 AC Conductor is an AC switching network that is a handy addition to your computer system. You will no longer have to grope for the AC switches that control each peripheral. Simply plug your system into the Conductor and control the AC power to each unit from the Conductor's front panel.

The Conductor can control up to five pieces of equipment: the computer, monitor, printer, and two

auxiliary peripherals. Each unit has its own front panel power switch and LED that lights when the unit is turned on.

Another unique feature of the AC Conductor is its turntable base. Place your monitor on the Conductor and you can rotate the Conductor and monitor for easier viewing.



"Heathkit Conductor" allows a user to fully control (switch on/off) auxiliary peripherals such as turntable, television, etc. via signal out on two jacks (one out and one "Heathkit Conductor") and switch in on the Conductor's left. Jumper options accommodate various input levels.

Turntable allows a CRT monitor to rotate and tilt 45°. Turntable base provides two levels of rotation.

ASSEMBLY NOTES

TOOLS

You will need these tools to assemble your kit.



LONG-NOSE
PLIERS



DIAGONAL
CUTTERS



WIRE
STRIPPERS



PLIERS



1/8" & 1/4"
BLADE
SCREWDRIVERS



PHILLIPS
SCREWDRIVER

OTHER HELPFUL TOOLS



DESOLDERING
BULB*



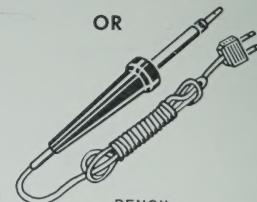
DESOLDERING
BRAID*

*To Remove Solder From Circuit Connections.



SOLDERING IRON

OR



PENCIL
SOLDERING IRON
(25 TO 40, OR 30
TO 50 WATTS)

ASSEMBLY

1. Follow the instructions carefully. Read the entire step before you perform each operation.
2. The illustrations in the Manual are called Pictorials and Details. Pictorials show the overall operation for a group of assembly steps; Details generally illustrate a single step. When you are directed to refer to a certain Pictorial "for the following steps," continue using that Pictorial until you are referred to another Pictorial for another group of steps.
3. Most kits use a separate "Illustration Booklet" that contains illustrations (Pictorials, Details, etc.) that are too large for the Assembly Manual. Keep the "Illustration Booklet" with the Assembly Manual. The illustrations in it are arranged in Pictorial number sequence.
4. Position all parts as shown in the Pictorials.
5. Solder instructions are generally given only at the end of a series of similar steps. You may solder more often if you desire.

6. Each circuit part in an electronic kit has its own component number (R2, C4, etc.). Use these numbers when you want to identify the same part in the various sections of the Manual. These numbers, which are especially useful if a part has to be replaced, appear:
 - In the Parts List,
 - At the beginning of each step where a component is installed,
 - In some illustrations,
 - In Troubleshooting Charts,
 - In the Schematic,
 - In the sections at the rear of the Manual.
7. When you are instructed to cut something to a particular length, use the scales (rulers) provided at the bottom of the Manual pages.

SAFETY WARNING: Avoid eye injury when you cut off excessive lead lengths. Hold the leads so they cannot fly toward your eyes.

SOLDERING

Soldering is one of the most important operations you will perform while assembling your kit. A good solder connection will form an electrical connection between two parts, such as a component lead and a circuit board foil. A bad solder connection could prevent an otherwise well-assembled kit from operating properly.

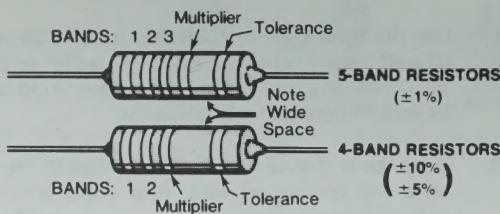
It is easy to make a good solder connection if you follow a few simple rules:

1. Use the right type of soldering iron. A 25 to 40-watt pencil soldering iron with a 1/8" or 3/16" chisel or pyramid tip is adequate. A 30 to 50-watt soldering iron is desirable.
2. Keep the soldering iron tip clean. Wipe it often on a wet sponge or cloth; then apply solder to the tip to give the entire tip a wet look. This process is called tinning, and it will protect the tip and enable you to make good connections. When solder tends to "ball" or does not stick to the tip, the tip needs to be cleaned and retinned.

NOTE: Always use rosin core, radio-type solder (60:40 tin-lead content) for all of the soldering in this kit. This is the type we have supplied with the parts. The Warranty will be void and we will not service any kit in which acid core solder or paste has been used.

RESISTORS

Resistors are identified in Parts Lists and steps by their resistance value in Ω (ohms), $k\Omega$ (kilohms), or $M\Omega$ (megohms). They are usually identified by a color code of four or five color bands, where each color represents a number. See the "Resistor Color Code" chart. These colors are given in the steps in their proper order (except for the last band, which indicates a resistor's "tolerance"; see the "Resistor Tolerance Chart"). You do not need to memorize the color codes.



Occasionally, a "precision" or "power" resistor may have the value stamped on it. The letter R, K, or M may also be used at times to signify a decimal point, as in:

- 2R2 = 2.2Ω
- 2K2 = $2.2k\Omega$, or 2200Ω
- 2M2 = $2.2M\Omega$

Precision resistors may also be marked as shown in the following examples. The values of the multipliers are shown in the "Multiplier Chart," and the tolerance values are shown in the "Resistor Tolerance" chart.

Resistor
Value
I
Multiplier
Tolerance

EXAMPLES: 1009C = $100 \times 0.1 = 10\Omega$, $\pm 0.25\%$
1001D = $100 \times 10 = 1000\Omega$, $\pm 0.5\%$

CAPACITORS

Capacitors will be called out by their capacitance value in μF (microfarads) or pF (picofarads) and type: ceramic, Mylar®, electrolytic, etc. Some capacitors may have their value printed in the following manner:

First and second digits of capacitor's value: 15

Multiplier: Multiply the first & second digits by the proper value from the "Multiplier Chart."

To find the tolerance of the capacitor, look up this letter in the capacitor Tolerance chart.

RESISTOR COLOR CODE CHART

	Band 1	Band 2	Band 3 (if used)	Multiplier
Color	1st Digit	2nd Digit	3rd Digit	
Black	0	0	0	1
Brown	1	1	1	10
Red	2	2	2	100
Orange	3	3	3	1,000
Yellow	4	4	4	10,000
Green	5	5	5	100,000
Blue	6	6	6	1,000,000
Violet	7	7	7	10,000,000
Gray	8	8	8	100,000,000
White	9	9	9	—
Silver	—	—	—	.01
Gold	—	—	—	.1

RESISTOR TOLERANCE CHART

	COLOR OR LETTER
$\pm 10\%$	SILVER
$\pm 5\%$	GOLD
$\pm 2\%$	RED
$\pm 1\%$	BROWN
$\pm 0.5\%$	GREEN
$\pm 0.25\%$	BLUE
$\pm 0.1\%$	VIOLET
$\pm 0.05\%$	GRAY

MULTIPLIER CHART

FOR THE NUMBER:	MULTIPLY BY:	FOR THE NUMBER:	MULTIPLY BY:
0	1	4	10,000
1	10	5	100,000
2	100	8	0.01
3	1000	9	0.1

CAPACITOR TOLERANCE CHART

LETTER	10 pF OR LESS	OVER 10 pF
B	$\pm 0.1 pF$	
C	$\pm 0.25 pF$	
D	$\pm 0.5 pF$	
F	$\pm 1.0 pF$	$\pm 1\%$
G	$\pm 2.0 pF$	$\pm 2\%$
H		$\pm 3\%$
J		$\pm 5\%$
K		$\pm 10\%$
M		$\pm 20\%$

EXAMPLES: 151K = $15 \times 10 = 150 pF$
759 = $75 \times 0.1 = 7.5 pF$

NOTE: The letter "R" may be used at times to signify a decimal point, as in: 2R2 = 2.2 (pF or μF).

PARTS LIST

Unpack your kit and check each part against the following list. The key numbers correspond to the numbers on the "Parts Pictorial." Return any part that is in an individual envelope back into the envelope after you have identified it, until that part is called for in a step. Do not throw away any packing material until you account for all the parts.

KEY	HEATH	QTY.	DESCRIPTION	CIRCUIT
No.	Part No.			Comp. No.

ELECTRICAL PARTS

A1	6-153	6	15 kΩ, 1/2-watt, 5% (brn-grn-org) resistor	R101 – R106
A2	9-151	1	Varistor	MOV1
A3	21-821	2	4700 pF (472) capacitor	C1, C2
A4	57-27	6	1N5397 diode	D101 – D106
A5	61-63	6	Rocker switch	SW101 – SW106
A6	412-640	6	LED	V101 – V106
A7	421-71	1	15-ampere fuse	F1
A8	434-388-1	5	AC socket housing	S1 – S5

HARDWARE

B1	250-329	1	8-32 × 5/8" screw
B2	250-1263	6	#6 × 3/8" self-tapping screw
B3	252-3	3	6-32 nut
B4	252-760	1	8-32 lock nut
B5	253-748	3	Nylon shoulder washer
B6	254-1	4	#6 lockwasher
B7	259-1	1	#6 solder lug

To order a replacement part, always include the PART NUMBER. Use the Parts Order Form furnished with this kit. If a Parts Order Form is not available, refer to "Replacement Parts" inside the rear cover of this Manual.

KEY	HEATH	QTY.	DESCRIPTION	CIRCUIT
No.	Part No.			Comp. No.

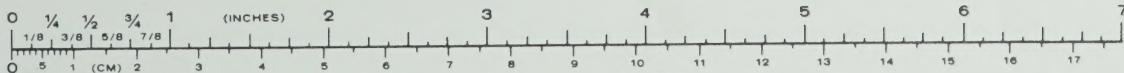
WIRE – SLEEVING

340-1	24"	Small bare wire
340-4	6"	Large bare wire
344-187	12"	White wire
344-251	84"	Black wire
346-19	24"	Black sleeving
346-21	12"	White sleeving

MISCELLANEOUS

C1	75-857	Line cord strain relief
	85-3173-1	Circuit board
	89-68	Line cord
C2	90-1374-1	Cabinet top
C3	200-1526-2	Chassis
C4	205-1992	Turntable
C5	261-49	Rubber foot
C6	390-147	Danger label*
C7		Blue and white label*
C8	423-11	Fuseholder
C9	431-42	Terminal strip
C10	434-388-2	AC socket housing cover
C11	485-34	Plug
	597-260	Solder
		Assembly Manual (See Page 1 for part number.)
		Parts Order Form*

* These items will be packed inside the Manual. Set them aside for use later.



STEP-BY-STEP ASSEMBLY

CIRCUIT BOARD ASSEMBLY

Refer to Pictorial 1 as you read the following notes and steps.

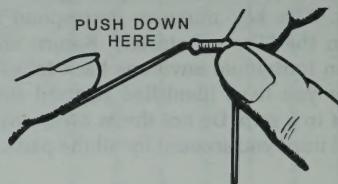
NOTES:

1. In each series of steps, you will install parts in a left-to-right, top-to-bottom sequence. Occasionally, you may be directed to install a part out of sequence.
2. Check off each step as you perform it. You may also wish to place a check mark near each component on the Pictorial as you install it.
3. In general, solder instructions are given only at the end of a series of similar steps. You may solder more often if you wish.

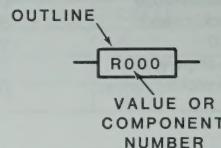
In the following steps, you will be given detailed instructions on how to install and solder the first component on the circuit board. Read and perform each step carefully. Then use the same procedure to install the remaining components on the circuit board.

Note that the circuit board has foil patterns on one side and the other side has outlines of components (parts) shown on it. The "foil" side of the board will be referred to as such, and the side with the outlines will be called the "component" side of the board.

- () Position the circuit board as shown in the Pictorial with the component side facing up.
- () Hold a 15 k Ω (brn-grn-org) resistor by the body as shown and bend the leads straight down with your finger to fit the hole spacing for R106 on the circuit board.



- () R106: Start the resistor leads into their circuit board holes at the resistor's location. The end with color bands may be positioned either way. NOTE: Resistors are identified by the following circuit board outline:

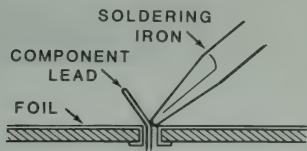


- () Press the resistor body against the circuit board and bend the leads outward slightly to hold it in place.

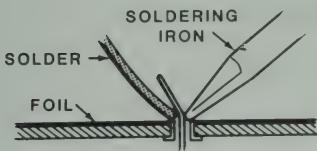


- () Solder the resistor leads to the circuit board as follows:

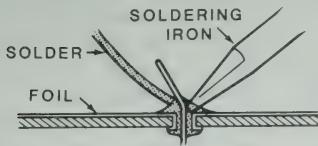
1. Push the soldering iron tip against both the lead and the circuit board foil. Heat both for two or three seconds.



2. Apply solder to the other side of the connection. **IMPORTANT:** Let the heated lead and the circuit board foil melt the solder.



3. As the solder begins to melt, allow it to flow around the connection. Then remove the solder and the iron and let the connection cool.



() Cut off the excess lead lengths close to the connection. **WARNING:** Clip the leads so the ends will not fly toward your eyes.

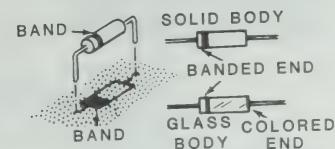
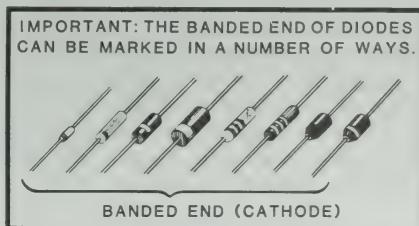
() Check each solder connection and compare it to Detail 1A. After you have checked the connections, proceed with the assembly. Use the same soldering procedure for each component.

Continue with Pictorial 1 and install the following components on the circuit board. Make sure you installed resistor R106 on Page 8 in an earlier step.

Install $15\text{ k}\Omega$ (brn-grn-org) resistors at the following five locations:

() R105.
 () R104.
 () R103.
 () R102.
 () R101.
 () Solder the leads to the foil and cut off any excess lead lengths.

NOTE: When you install a diode, always match the band on the diode with the band mark on the circuit board. The circuit will not work properly if a diode is installed backwards.



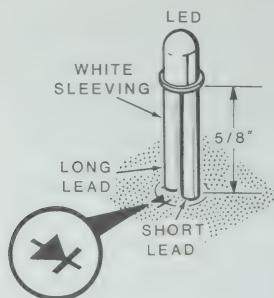
CAUTION: ALWAYS POSITION THE BANDED END OF A DIODE AS SHOWN ON THE CIRCUIT BOARD.

Install 1N5397 (#57-27) diodes at the following six locations:

- D106.
- D105.
- D104.
- D103.
- D102.
- D101.
- Solder the leads to the foil and cut off any excess lead lengths.
- Cut twelve 5/8" lengths of white sleeving.
- Insert a 5/8" length of white sleeving over each lead of each of the six LEDs.

NOTE: When you install an LED, as in the following steps, position it with its long lead as shown below and insert its leads into the corresponding circuit board holes. Push the LED down until the sleeving is against the circuit board. Then solder the leads to the foil and cut off any excess lead lengths.

CAUTION: Make sure you install the long and short LED leads in their correct holes.



Install the prepared LEDs at the following six locations:

- V106.
- V105.

V104.

V103.

V102.

V101.

NOTE: When you are instructed to prepare a wire, as in the following steps, cut it to the indicated length and remove 1/4" of insulation from one end and 3/8" of insulation from the other end.

Prepare the following wires:

- Five 13" black.
- One 10" black.
- One 10" white.

NOTE: When you connect the prepared wires to the circuit board in the following steps, insert the end of the wire with 3/8" of insulation removed through the indicated circuit board hole from the **foil side** of the circuit board. Hold the wire so its insulation is 1/8" above the foil and carefully solder the bare wire end to the foil. Then bend the excess lead lengths against the component side of the circuit board as shown in the inset drawing.

Connect the prepared wires to the circuit board as follows:

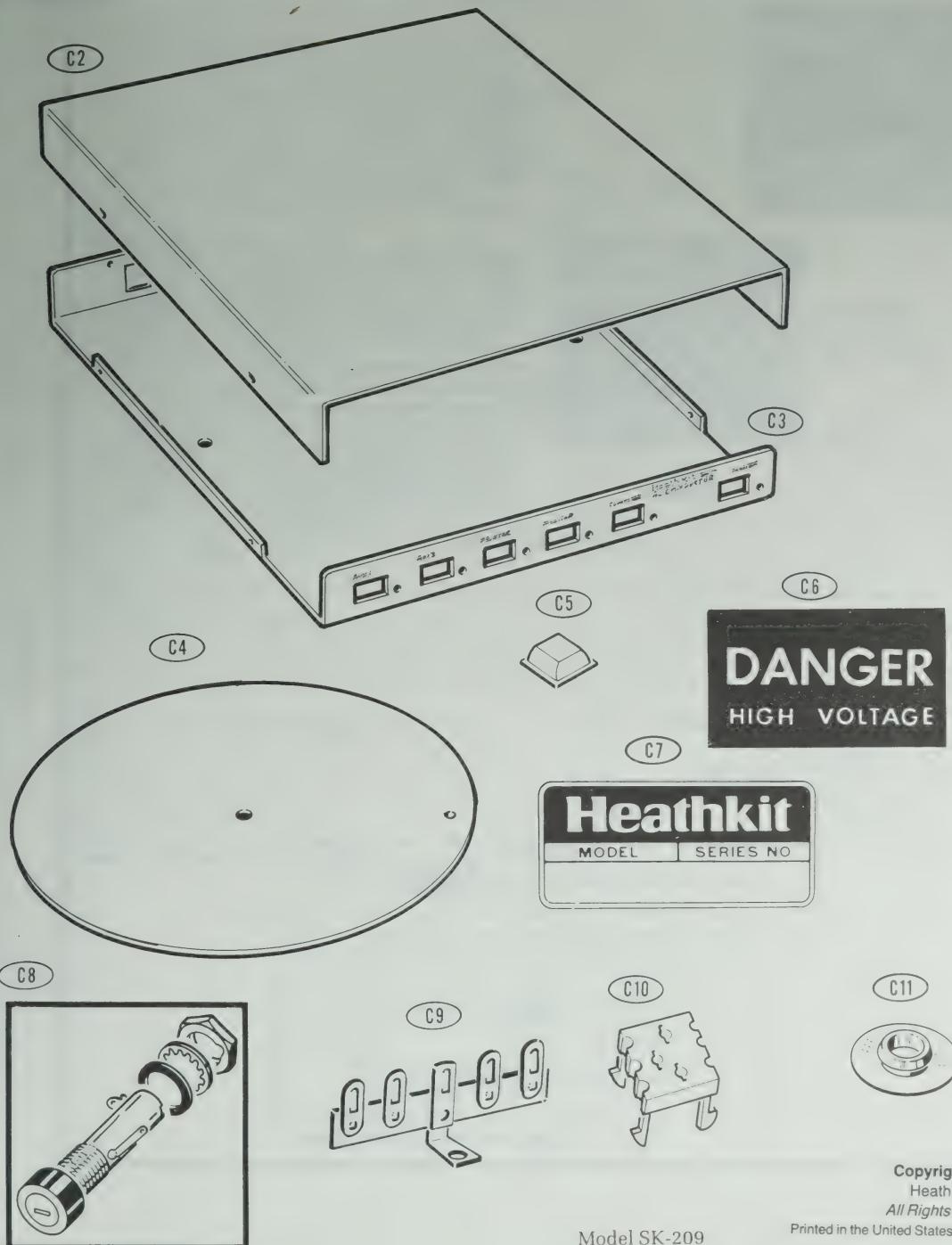
- 13" black to hole F.
- 13" black to hole E.
- 13" black to hole D.
- 13" black to hole C.
- 13" black to hole B.
- 10" black to hole A.
- 10" white to hole G.



ON BOOKLET

CTORIAL

Part of 595-3598-03



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Model SK-209

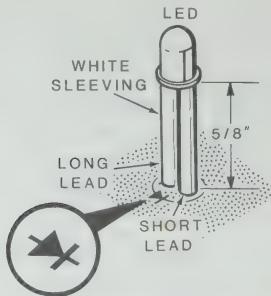
Printed in the United States of America

Install 1N5397 (#57-27) diodes at the following six locations:

- D106.
- D105.
- D104.
- D103.
- D102.
- D101.
- Solder the leads to the foil and cut off any excess lead lengths.
- Cut twelve 5/8" lengths of white sleeving.
- Insert a 5/8" length of white sleeving over each lead of each of the six LEDs.

NOTE: When you install an LED, as in the following steps, position it with its long lead as shown below and insert its leads into the corresponding circuit board holes. Push the LED down until the sleeving is against the circuit board. Then solder the leads to the foil and cut off any excess lead lengths.

CAUTION: Make sure you install the long and short LED leads in their correct holes.



Install the prepared LEDs at the following six locations:

- V106.
- V105.

V104.

V103.

V102.

V101.

NOTE: When you are instructed to prepare a wire, as in the following steps, cut it to the indicated length and remove 1/4" of insulation from one end and 3/8" of insulation from the other end.

Prepare the following wires:

- Five 13" black.
- One 10" black.
- One 10" white.

NOTE: When you connect the prepared wires to the circuit board in the following steps, insert the end of the wire with 3/8" of insulation removed through the indicated circuit board hole from the **foil side** of the circuit board. Hold the wire so its insulation is 1/8" above the foil and carefully solder the bare wire end to the foil. Then bend the excess lead lengths against the component side of the circuit board as shown in the inset drawing.

Connect the prepared wires to the circuit board as follows:

- 13" black to hole F.
- 13" black to hole E.
- 13" black to hole D.
- 13" black to hole C.
- 13" black to hole B.
- 10" black to hole A.
- 10" white to hole G.

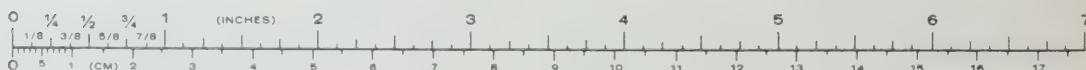
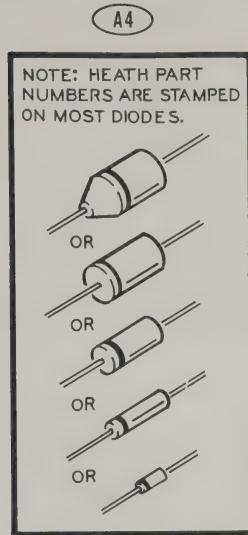
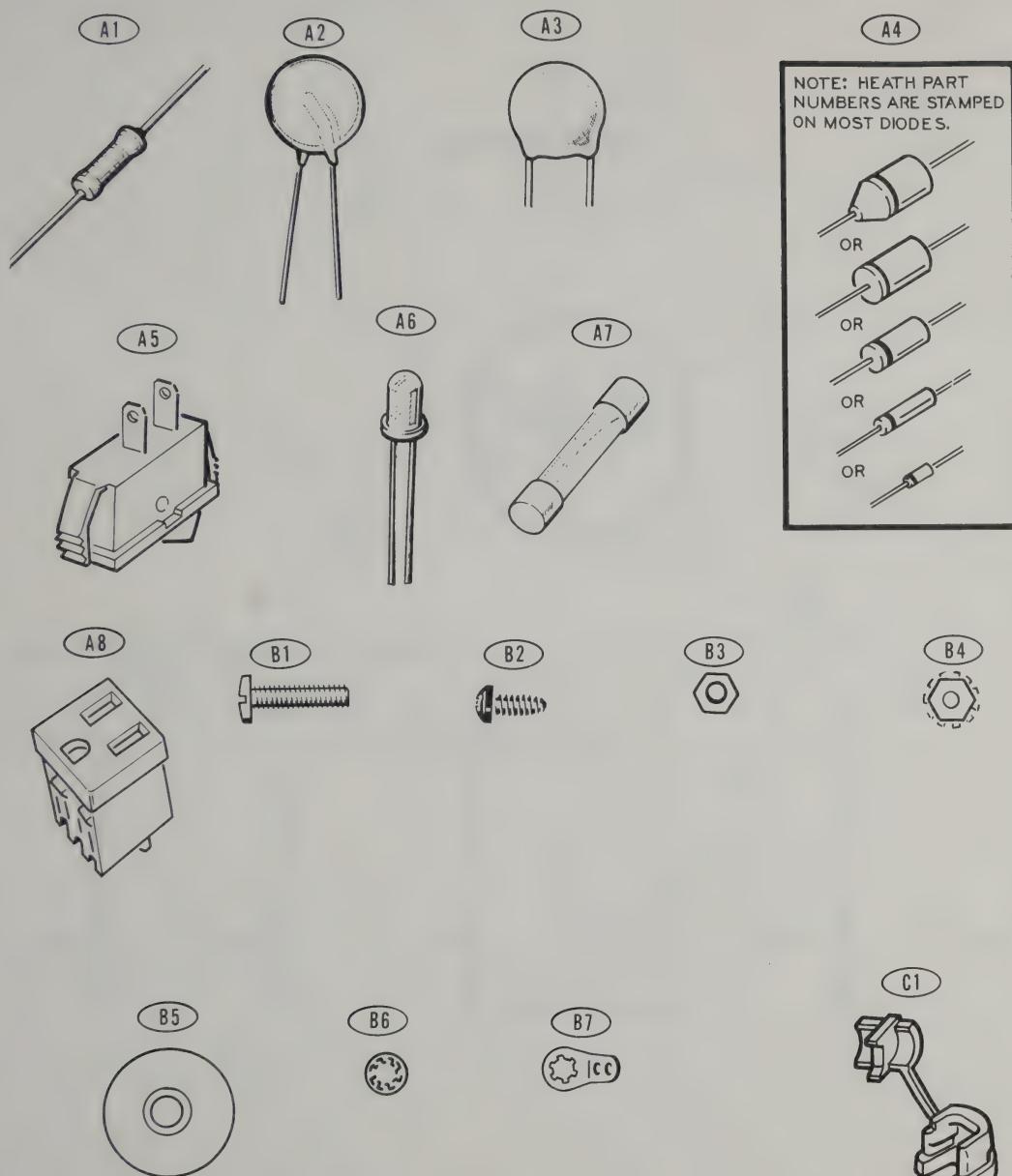
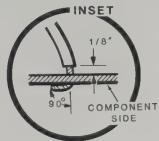
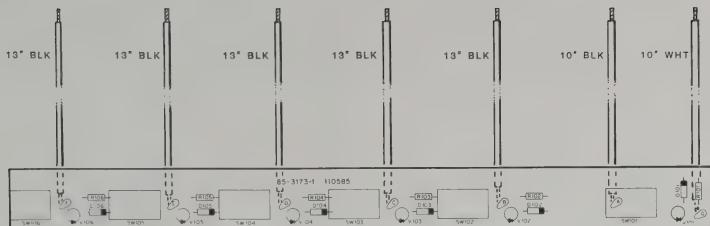


ILLUSTRATION BOOKLET

PARTS PICTORIAL





PICTORIAL 1

A GOOD SOLDER CONNECTION



When you heat the lead and the circuit board foil at the same time, the solder will flow evenly onto the lead and the foil. The solder will make a good electrical connection between the lead and the foil.

POOR SOLDER CONNECTIONS



SOLDER DOES NOT FLOW ONTO LEAD. A DARK ROSIN BEAD SURROUNDS AND INSULATES THE LEAD FROM THE CONNECTION.
FOIL
ROSIN
SOLDERING IRON POSITIONED INCORRECTLY



SOLDER APPEARS TO FLOW INWARD AND SET ON TOP OF FOIL.
FOIL
ROSIN
SOLDERING IRON POSITIONED INCORRECTLY

When the lead is not heated sufficiently, the solder will not flow onto the lead as shown above. To correct, reheat the connection and, if necessary, apply a small amount of additional solder to obtain a good connection.

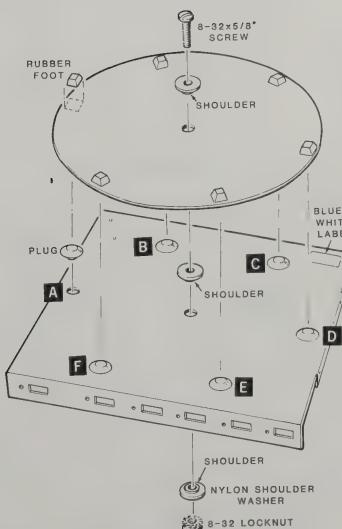
SOLDER BRIDGES

A solder bridge between two adjacent foils is shown in photograph A. Photograph B shows how the connection should appear. A solder bridge may occur if you accidentally touch an adjacent previously soldered connection, if you use too much solder, or if you "dross" the soldering iron onto other foils. You remove it from the connection. A good rule to follow is: always take a good look at the foil around each lead before you solder it. Then, when you solder the connection, make sure the solder remains in this area and does not bridge to another foil. This is especially important when the foils are small and close together. NOTE: It is alright for solder to bridge two connections on the same foil.

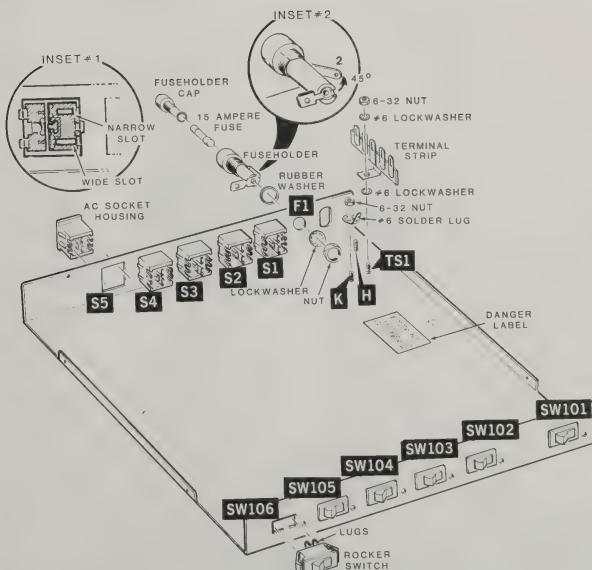


SOLDER BRIDGE

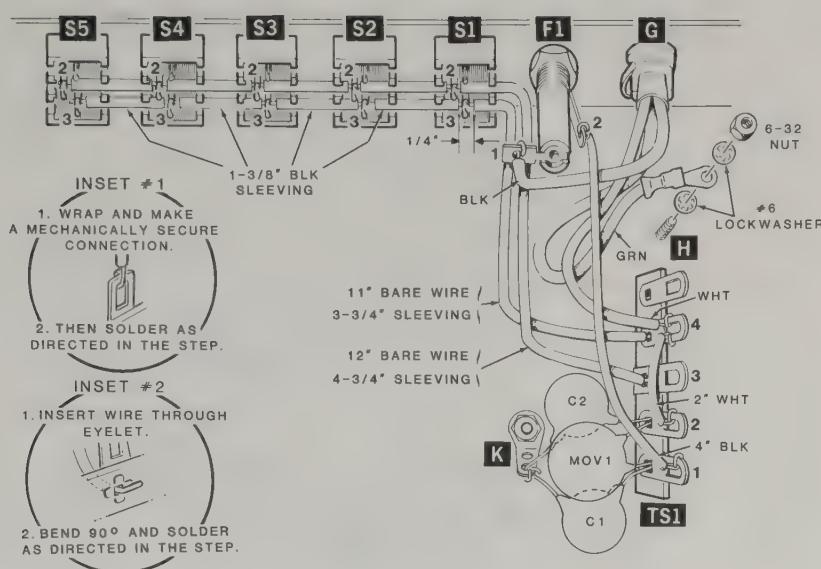
Detail 1A



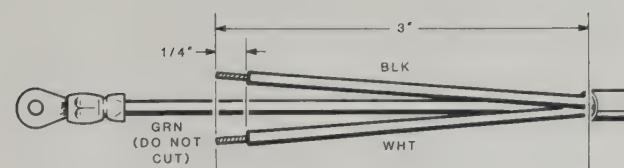
PICTORIAL 2



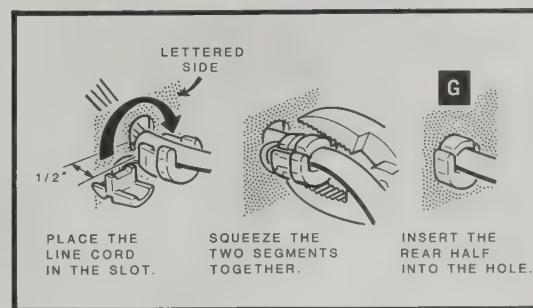
PICTORIAL 3



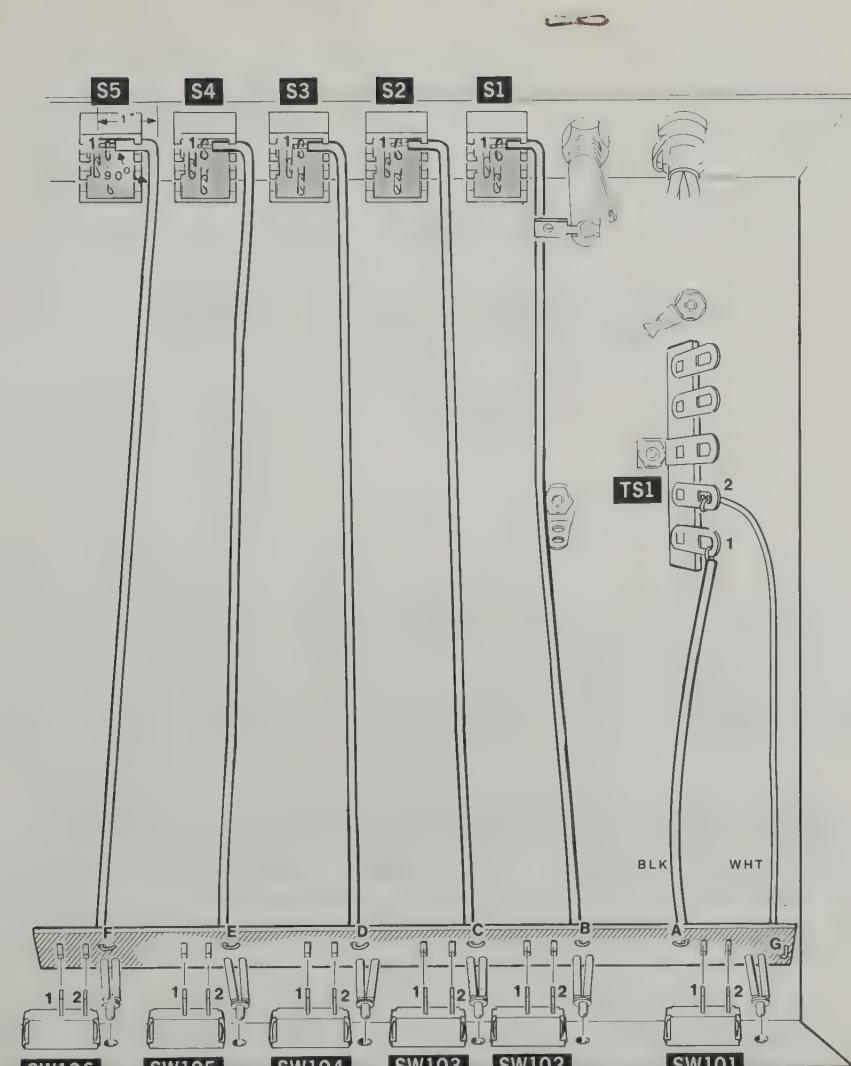
PICTORIAL 4



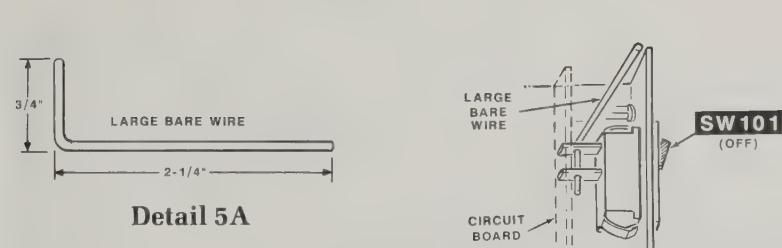
Detail 4A



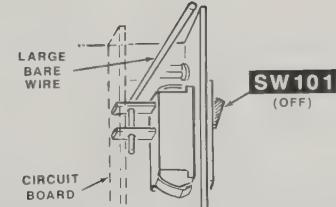
Detail 4B



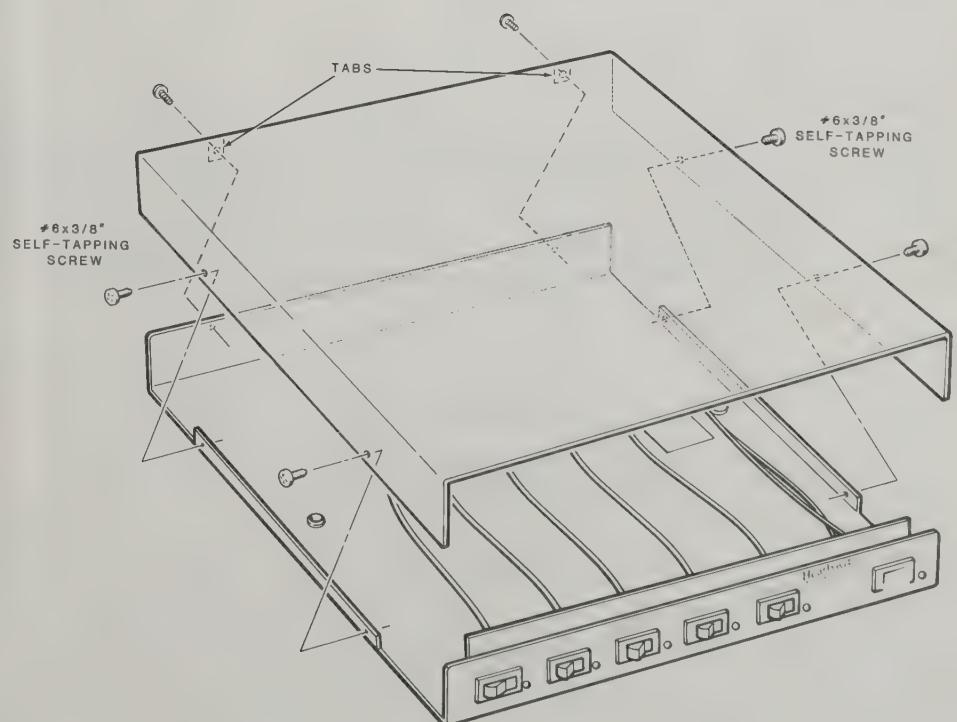
PICTORIAL 5



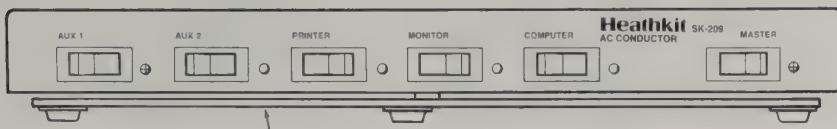
Detail 5A



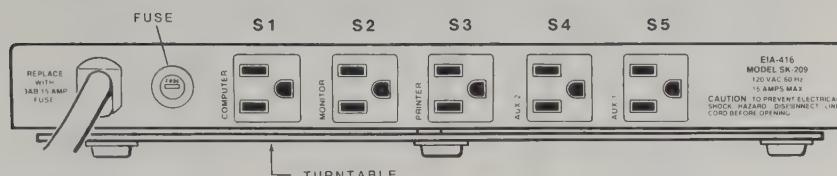
Detail 5B



PICTORIAL 6

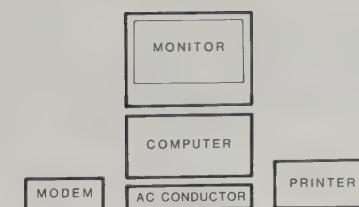


FRONT PANEL

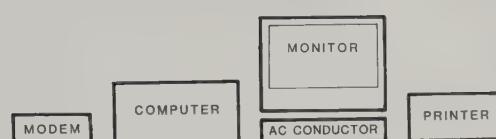


REAR PANEL

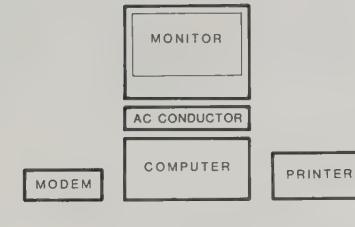
PICTORIAL 7



PICTORIAL 9



PICTORIAL 8



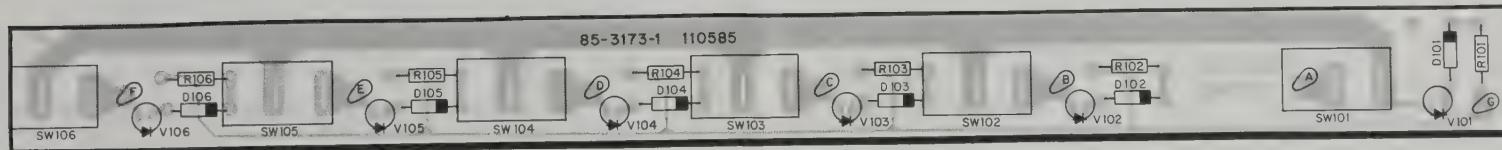
PICTORIAL 10

CIRCUIT BOARD X-RAY VIEW

NOTE: To find the PART NUMBER of a component for the purpose of ordering a replacement part:

- A. Find the circuit component number (R101, D101, etc.) on the Circuit Board X-Ray View.
- B. Locate this same number in the "Circuit Component Number" column of the "Parts List."

- C. Adjacent to the circuit component number, you will find the PART NUMBER and DESCRIPTION which must be supplied when you order a replacement part.

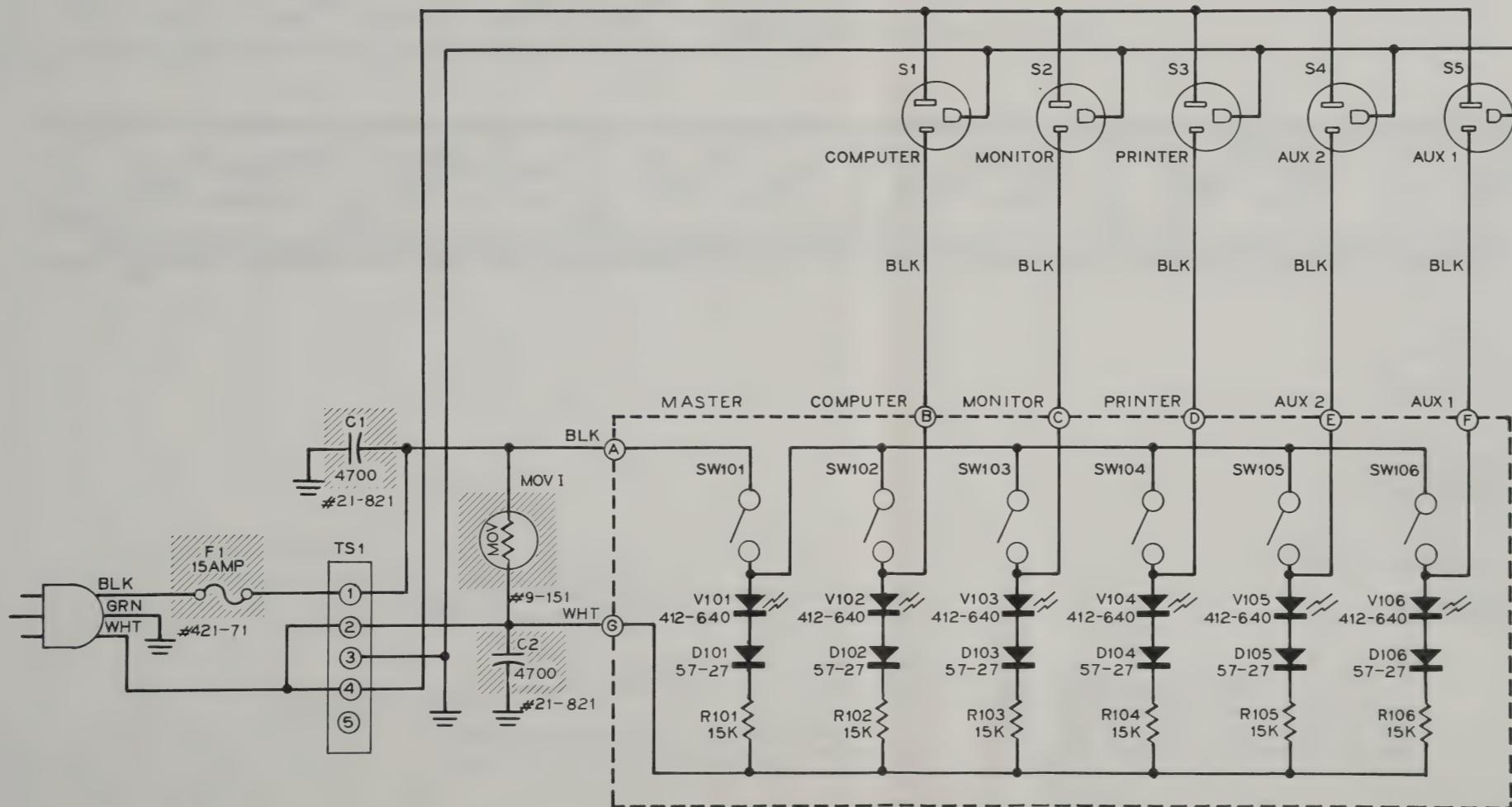


(VIEWED FROM THE COMPONENT SIDE)

**SCHEMATIC OF THE
HEATHKIT®
AC CONDUCTOR
MODEL SK-209**

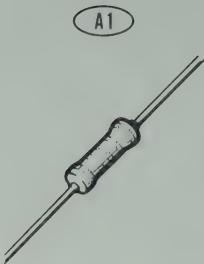
SCHEMATIC NOTES

1. Refer to the "Circuit Board X-Ray View" for the physical location of parts.
2. Resistors are 1/2-watt 5% tolerance. Resistor values are in ohms ($K = 1000$).
3. All switches are shown in their open(OFF) position.
4. Capacitor values are in microfarads.
5. \equiv Indicates chassis ground.
6. Parts shown in shaded areas are critical to safety. Replace only with the same rated part or a Heath Company part.



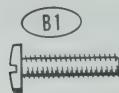
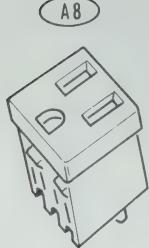
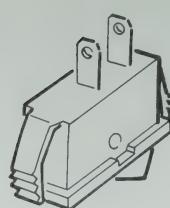
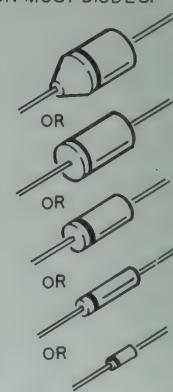
ILLUSTRATED

PARTS



A4

NOTE: HEATH PART
NUMBERS ARE STAMPED
ON MOST DIODES.



CIRCUIT BOARD CHECKOUT

Carefully inspect the circuit board for the following most-commonly-made-errors:

- () Unsoldered connections.
- () Poor solder connections.
- () Diodes installed improperly.
- () Solder bridges between foil patterns.
NOTE: Refer to the "Circuit Board X-Ray View" (Illustration Booklet, Page 7) if you are uncertain and want to see the correct foil patterns.
- () Protruding leads which could touch together or short to the chassis when the circuit board is mounted later.

 () Temporarily set the circuit board aside.

CHASSIS ASSEMBLY

Refer to Pictorial 2 for the following steps.

- () Position the chassis upside down on your work surface as shown in the Pictorial.
- () Insert a plug into chassis hole A as shown. Push the plug firmly into the hole until it locks in place.
- () In the same manner insert the remaining plugs into chassis holes B, C, D, E, and F.
- () Mount the turntable to the chassis bottom as shown. Use an 8-32 × 5/8" screw, three nylon shoulder washers, and an 8-32 lock nut. Be sure to position the shoulders on the washers as shown in the Pictorial. Do not overtighten the hardware or the turntable will not rotate freely.

- () Remove the backing from a rubber foot and press the foot onto the bottom of the turntable over chassis hole A.
- () In the same manner, install the remaining rubber feet onto the turntable bottom over chassis holes B, C, D, E, and F.
- () Remove the backing from the blue and white label and press the label onto the chassis bottom as shown. NOTE: Refer to the model and series numbers on this label in any correspondence you have with the Heath Company about this kit.

Refer to Pictorial 3 for the following steps.

-  () Reposition the chassis as shown in the Pictorial.
-  () Insert an AC socket housing into chassis hole S5. Push the socket firmly into the chassis until it locks into place. Be sure to position the socket as shown in inset drawing #1.
-  () In the same manner, insert the remaining AC socket housings into chassis holes S4, S3, S2, and S1.
- () Install the 15-ampere fuse into the fuseholder and screw on the fuseholder cap.
- () Mount the fuseholder to the chassis at hole F1 as shown. Use the rubber washer, lock-washer, and nut supplied with the fuseholder. Be sure to position the lugs as shown in the Pictorial. Then bend lug 2 away from the fuseholder at approximately a 45° angle.
- () Mount the terminal strip to chassis stud TS1 with two #6 lockwashers and a 6-32 nut. Be sure to position the lockwashers and terminal strip as shown.
- () Mount the #6 solder lug to chassis stud K with a 6-32 nut. Be sure to position the solder lug as shown.

(✓) Insert a rocker switch into chassis hole SW106. Push the switch firmly into the chassis until it locks into place. Be sure to position the switch lugs as shown.

(✓) In the same manner, install the remaining rocker switches into chassis holes SW105, SW104, SW103, SW102, and SW101.

() Remove the backing from the danger label and press the label to the chassis bottom as shown.

Refer to Pictorial 4 for the following steps.

() Cut both leads of both 4700 pF (472) capacitors to 1/2" from where they leave the capacitor body.

NOTES:

1. When you are directed to make a mechanically secure connection, as in the next step, form a hook in the bare end of the lead or wire as shown in inset drawing #1. Then hook the bare end through the lug and crimp it securely in place.
2. To make a mechanically secure connection when a wire is routed through the terminal strip eyelet, route the wire through the eyelet. Then bend the wire 90° as shown in inset drawing #2.
3. In the following steps, (NS) means not to solder because other wires will be added later. "S-" with a number following it, such as (S-3), means to solder the connection. The number "-3" tells you that there are three wires and/or leads in the connection. This will allow you to check your work as you go.

() C1: Connect one lead of a prepared 4700 pF (472) capacitor to terminal strip TS1 eyelet 1 (NS). Connect the other lead to solder lug K (NS). Make both leads mechanically secure connections as shown in the inset drawing.

() C2: Connect one lead of the remaining 4700 pF (472) capacitor to terminal strip TS1 eyelet 2 (NS). Connect the other lead to solder lug K (S-2). Make both leads mechanically secure connections.

(✓) Cut both leads of the varistor to 1/2" from where they leave the varistor body.

(✓) MOV 1: Connect one lead of the varistor to terminal strip TS1 eyelet 1 (NS). Connect the other lead to terminal strip TS1 eyelet 2 (NS). Make both leads mechanically secure connections.

NOTE: When you are instructed to prepare a wire, as in the following steps, cut it to the indicated length and remove 1/4" of insulation from each end. If the wire is stranded, twist the fine wire strands tightly together and apply a small amount of solder to hold the fine strands together.

Prepare the following wires:

(✓) 4" black.

(✓) 2" white.

(✓) Connect one end of the 4" black wire to terminal strip TS1 lug 1 (NS). Connect the other end of this wire to fuseholder F1 lug 2 (S-1).

(✓) Connect one end of the 2" white wire to terminal strip TS1 lug 2 (NS). Connect the other end of this wire to terminal strip TS1 lug 4 (NS). Make both connections mechanically secure.

Prepare the following small bare wires and black sleeving:

(✓) 11" wire.

(✓) 12" wire.

(✓) 3-3/4" sleeving.

(✓) 4-3/4" sleeving.

(✓) Eight 1-3/8" sleeving.

(✓) Connect one end of the 11" bare wire to terminal strip TS1 eyelet 4 (NS). Make a mechanically secure connection.

() Push the 3-3/4" length of black sleeving over the 11" bare wire until it just touches the terminal strip lug. Then route the wire under the fuseholder and along the chassis as shown in the Pictorial.



- (✓) Install four 1-3/8" lengths of black sleeving over the 11" bare wire.
- (✓) Leave approximately 1/4" of bare wire exposed between the 3-3/4" sleeving and the next length of 1-3/8" sleeving. Then insert the exposed 1/4" length of bare wire into AC socket housing S1 lug 3. Use a small-blade screwdriver to push the bare wire into the socket lug. Make sure the wire is pushed in securely.
- (✓) In the same manner, insert the bare wire into AC socket housings S2, S3, S4, and S5 lugs 3. Be sure to space the lengths of sleeving approximately 1/4" at the housing lugs. If necessary, cut off any excess wire length at S5.
- (✓) Connect one end of the 12" bare wire to terminal strip TS1 eyelet 3 (S-1). Make a mechanically secure connection.
- (✓) In the same manner as before, insert the 4-3/4" and four 1-3/8" lengths of black sleeving over the 12" bare wire. Then insert the exposed bare wire areas into AC socket housings S1, S2, S3, S4, and S5 lugs 2.

Refer to Detail 4A and prepare the line cord as follows:

1. Cut the black and white line cord leads 3" from where they leave the outer insulation.
2. Remove 1/4" of insulation from the free ends of the white and black wires. Apply a small amount of solder to the bare wire ends to hold the fine strands together.
- (✓) Refer to Detail 4B and crimp the line cord strain relief onto the line cord 1/2" from the edge of the outer insulation. Then insert the free end of the line cord and the strain relief into chassis hole G.

Connect the line cord leads as follows:

- (✓) Green to chassis stud H. Use two #6 lockwashers and a 6-32 nut.
- (✓) White to terminal strip TS1 lug 4 (S-3). Make a mechanically secure connection. Make sure all three wires are soldered.
- (✓) Black to fuseholder F1 lug 1 (S-1). Make a mechanically secure connection.

Refer to Pictorial 5 for the following steps.

- (✓) If necessary, push all six switches on the left side to set them to the OFF position.
- (✓) Cut the large bare wire in half. Then refer to Detail 5A and form both pieces as shown. Use the Detail as a template.

NOTE: In the following steps, if the wire fits too tightly in the switch lug holes, use a fine sandpaper (not supplied) to reduce the wire diameter.

- (✓) As shown in Detail 5B, insert the formed wires into the lug holes of SW101 from the **right side** and into the lug holes of SW106 from the **left side**.
- (✓) Position the circuit board into the front of the chassis and insert the switch lugs of SW101 through SW106 into the slotted circuit board holes. Also insert the LEDs through their respective front panel holes as shown in inset drawing #1.
- (✓) Seat the circuit board fully and firmly against the bare wires in the lug holes of the two switches. It may be helpful to use a heavy object as a backstop weight behind the circuit board to hold it in position.

NOTES:

1. Soldering the switches lugs in the following steps is critical to the reliability of the AC Conductor. Too little heat during soldering can result in a poor electrical connection and too much heat can damage the switch. A high-power (30 to 50-watt) soldering iron can provide enough heat for a good connection quickly so that the switch is not overheated. If you have access to such a high-power soldering iron, we recommend that you use it. If not, be sure your iron tip is clean and well-heated for each use and apply enough solder during each step to ensure quick heat flow into the connection.
2. It is important that you solder the lug on the **right** side of each switch first and then the left (center) lug. This provides correct anchoring for the switch so the left lug of the switch cannot move (due to internal spring force) when it is soldered.

- () Solder only the **right** lug at SW106. Be sure to use enough heat and solder to make a good connection quickly.
- () Allow a 30 second cooling time and then solder the remaining (left) lug at SW106. Do not remove the bare wire at this time.
- () Solder only the **right** lug at SW101. As before, be sure to use enough heat and solder to make a good connection quickly.
- () Allow cooling time and then solder the left lug at SW101.
- () After the connections at SW101 and SW106 have cooled, remove the bare wire from the lug holes and insert them from the left side into the lug holes at SW103 and SW105.
- () Repeat the soldering steps at the **right** lug then the left lug at SW103.
- () Repeat the soldering steps at SW105.
- () After cooling, move the bare wires to the lug holes at SW102 and SW104. Repeat the previous soldering step sequence at SW102 and SW104.
- () You may discard the large diameter bare wires or save them should switch replacement ever be required.
- () Route the black wire from circuit board hole F to AC socket housing S5. Bend the wire 90° 1" from the end and insert the bare wire end into S5 lug 1. Be sure that none of the bare wire end is exposed outside the socket housing.

In the same manner, connect the following wires from the circuit board to their respective AC socket housings:

- () Black wire from hole E to S4 lug 1.
- () Black wire from hole D to S3 lug 1.
- () Black wire from hole C to S2 lug 1.
- () Black wire from hole B to S1 lug 1.

- () Refer to inset drawing #2 and install an AC socket housing cover over AC socket housing S5. Be sure to line up cover holes BK, GN, and WHT with socket lugs 1, 2, and 3 respectively.

- () In the same manner, install housing covers over their remaining AC socket housings.

Connect the remaining circuit board wires to terminal strip TS1 as follows:

- () Black wire from hole A to lug 1 (S-4). Make the connection mechanically secure and make sure all the wires are soldered.
- () White wire from hole G to lug 2 (S-4). Make the connection mechanically secure and make sure all the wires are soldered.

CHASSIS CHECKOUT

Carefully inspect the chassis for the following most-commonly-made-errors:

- () Unsoldered connections.
- () Poor solder connections.
- () Protruding leads which could touch together or short to the chassis.

Final Assembly

Refer to Pictorial 6 for the following steps.

- () Position the cabinet top onto the chassis with the tabs towards the rear of the chassis as shown.
- () Secure the rear of the cabinet top tabs to the chassis with two #6 × 3/8" self-tapping screws.
- () Secure the sides of the top to the chassis with four #6 × 3/8" self-tapping screws.

This completes the "Step-By-Step Assembly." Proceed to the "Operational Tests" section.

OPERATIONAL TESTS

Refer to Pictorial 7 for the following steps.

NOTE: The following checks will verify that your AC Director functions properly. If you do not obtain the correct results in any of the following steps, position all of the front panel switches to their OFF position and refer to the "In Case of Difficulty" section on Page 17.

- () Plug your AC Conductor's line cord into an AC outlet.
- () Position the MASTER switch to its ON (right) position. The master LED should light.
- () One at a time, position the COMPUTER, MONITOR, PRINTER, AUX2, and AUX1 switches to their ON position. Their respective LEDs should light.
- () Position all of the front panel switches to their OFF position.
- () Plug a lamp or similar device into rear panel socket S1.
- () Position the MASTER switch to its ON position. Then position the COMPUTER switch to its ON position.
- () Turn the lamp or other device plugged into S1 on. The device should turn on.
- () Position the COMPUTER switch to its OFF position. The device plugged into S1 should turn off. Position the COMPUTER switch to its ON position.
- () Position the MASTER switch to its OFF position. The device plugged into S1 should turn off.
- () In the same manner, continue to test each of the remaining rear panel sockets (S2 through S5).
- () Position each of the front panel switches to their OFF position and unplug the lamp or other device plugged into the rear panel socket.

This completes the "Operational Tests." Proceed to "Operation."

OPERATION

Refer to Pictorial 7 for the location of the front panel switches and LEDs, and the rear panel sockets.

CAUTION: Make sure the equipment plugged into your AC Conductor does not exceed 15-amperes total load current.

FRONT AND REAR PANELS

MASTER switch — Switches power ON and OFF for the entire unit. This switch must be in its ON position (right) to activate any of the other switches and sockets. When this switch is in its ON position, the MASTER LED lights.

AUX 1 switch — Switches power ON and OFF for AC socket S5. You can plug auxiliary equipment (second printer, modem, etc.) into socket S5 and switch it ON and OFF with the AUX 1 switch. When this switch is in its ON (right) position, the AUX 1 LED lights.

AUX 2 switch — Switches power ON and OFF for AC socket S4. This circuit operates identically to the AUX 1 circuit.

PRINTER switch — Switches power ON and OFF for AC socket S3. This circuit operates identically to the AUX 1 and AUX 2 circuits.

MONITOR switch — Switches power ON and OFF for AC socket S2. This circuit operates identically to the AUX 1, AUX 2, and PRINTER circuits.

COMPUTER switch — Switches power ON and OFF for AC socket S1. This circuit operates identically to the AUX 1, AUX 2, PRINTER, and MONITOR circuits.

TURNTABLE — Rotates the entire AC Conductor.

APPLICATIONS

Refer to Pictorials 8, 9, and 10 for Applications examples. In each example, the computer is plugged into rear panel socket S1, the monitor into socket S2, the printer into S3, and the modem into socket S4. You could then control the AC power to each of the units from the front panel of the AC Conductor. The COMPUTER switch controls the computer, the MONITOR switch controls the monitor, the PRINTER switch controls the printer, and the AUX 2 switch controls the modem.

Pictorial 8 illustrates a typical application where the monitor is set on top of the AC Conductor so the monitor can be rotated.

Pictorial 9 illustrates an application where the computer and monitor are "stacked" and both rotated by the AC Conductor.

Pictorial 10 illustrates an application where the computer and monitor are also stacked. However, since the AC Conductor is positioned between the monitor and computer, only the monitor rotates.

NOTE: Once equipment is plugged into the AC Conductor, you can leave their power switches ON. They can now be switched ON and OFF by the AC Conductor. The LEDs next to the switches indicate if the equipment is turned ON.

IN CASE OF DIFFICULTY

CAUTION: TO PREVENT ELECTRICAL SHOCK HAZARD, DO NOT APPLY POWER WHILE THE CABINET TOP IS REMOVED.

This part of the Manual will help you locate and correct difficulties which might occur in your AC Conductor. This information is divided into the "Visual Checks," "Shipping," and a "Troubleshooting Chart." Use the Visual Checks to locate any difficulties that occur right after the unit is assembled.

The "Troubleshooting Chart" calls out specific problems that may occur and lists one or more conditions or components that could cause each problem. A "Circuit Board X-Ray View" is also provided in the Illustration Booklet on Page 7 to help you locate the circuit components, and compare foil patterns in case you suspect that a solder bridge exists between the foils.

In an extreme case where you are unable to resolve a difficulty, refer to the "Customer Service" information inside the rear cover of this Manual. Your Warranty is located inside the front cover.

VISUAL CHECKS

1. About 90% of the kits that are returned for repair do not function properly due to poor connections and soldering. Therefore, you can eliminate many difficulties by carefully

inspecting each connection to make sure it is soldered as described in the "Soldering" instructions for the first part on Page 8. Reheat any doubtful connections.

2. Check the circuit board to be sure there are no solder bridges between adjacent connections. Check the "X-Ray View" for any questions you may have concerning the foil pattern.
3. Be sure the banded end of each each diode is positioned correctly.
4. Recheck the wiring. It is frequently helpful to have a friend check your work. Someone who is not familiar with the unit may notice something you have consistently overlooked.
5. Check all component leads connected to the circuit board. Make sure that none of the leads make contact with other connections or components.

SHIPPING

IMPORTANT: If it becomes necessary to ship your assembled kit to the Heath Company or a Heath/Zenith Computers and Electronics Center, attach the cabinet top to protect the circuit board during shipment.

Troubleshooting Chart

The following Troubleshooting Chart lists specific difficulties that could occur in your AC Conductor. Several possible causes may be listed for each difficulty. Refer to the "Circuit Board X-Ray View" and the "Schematic Diagram" to locate and identify the parts listed in this chart.

If a particular part is mentioned (R101 for example) as a possible cause, check that part and other components connected to it to see that they are installed and/or wired correctly. Also check for solder bridges and poor connections in the surrounding area. It is also possible, on rare occasions, for a part to be faulty and require replacement.

PROBLEM	POSSIBLE CAUSE
No power to sockets S1 through S5.	<ol style="list-style-type: none"> 1. SW101 is not turned ON. 2. SW102 through SW106 are not turned ON. 3. Fuse F1. 4. MOV1. 5. No power at the line cord.
LED V101 does not light when SW101 is turned ON.	<ol style="list-style-type: none"> 1. Switch SW101. 2. Fuse F1. 3. LED V101 installed backwards. 4. Diode D101 installed backwards. 5. Resistor R101.
LEDs V102 through V106 do not light when SW101 and the associated switch is turned ON.	<ol style="list-style-type: none"> 1. Associated switch. 2. Associated LED. 3. Associated diode. 4. Associated resistor.

SPECIFICATIONS

Power Requirements	120 VAC, 60 Hz.
Current Rating	15-amperes (maximum total).
Operating Temperature	32° F to 122° F. 0° C to 50° C.
Dimensions	13-1/2" W × 14" D × 1-3/4" H (34.3 × 35.6 × 4.5 cm).
Weight	6.2 lbs. (2.81 kg).

The Heath Company reserves the right to discontinue products and to change specifications at any time without incurring any obligations to incorporate new features in products previously sold.

CIRCUIT DESCRIPTION

Refer to the Schematic Diagram while you read this "Circuit Description."

Capacitors C1 and C2 provide filtering for the AC line voltage. MOV1 (metal oxide varistor) protects the AC Conductor against power line spikes. Fuse F1 provides protection against excessive loads connected to the AC Conductor.

SW101 is the Master Switch that controls power to the AC Conductor. When SW101 is ON, SW102 through SW106 control the power to AC sockets S1 through S5 respectively.

Since all of the switching circuits operate similarly, only the Master Switch circuit is described.

When SW101 is ON, the line voltage is applied to the anode of LED (light emitting diode) V101. V101 and D101 conduct on the positive half-cycle of the AC voltage and lights the LED. R101 provides current limiting for V101. V101 and D101 are reversed biased on the negative half-cycle of the AC voltage.

CUSTOMER SERVICE

REPLACEMENT PARTS

Please provide complete information when you request replacements from either the factory or Heath/Zenith Computers and Electronics centers. Be certain to include the **HEATH** part number exactly as it appears in the parts list.

ORDERING FROM THE FACTORY

Print all of the information requested on the parts order form furnished with this product and mail it to Heath. For telephone orders (parts only) dial 616 982-3571. If you are unable to locate an order form, write us a letter or card including:

- Heath part number.
- Model number.
- Date of purchase.
- Location purchased or invoice number.
- Nature of the defect.
- Your payment or authorization for COD shipment of parts not covered by warranty.

Mail letters to: Heath Company
Benton Harbor
MI 49022
Attn: Parts Replacement

Retain original parts until you receive replacements. Parts that should be returned to the factory will be listed on your packing slip.

OBTAINING REPLACEMENTS FROM HEATH/ZENITH COMPUTER AND ELECTRONICS CENTERS

For your convenience, "over the counter" replacement parts are available from the Heath/Zenith Computer and Electronics centers listed in your catalog. Be sure to bring in the original part and purchase invoice when you request a warranty replacement from a Heath/Zenith Computer and Electronics center.

TECHNICAL CONSULTATION

Need help with your kit? — Self-Service? — Construction? — Operation? — Call or write for assistance. You'll find our Technical Consultants eager to help with just about any technical problem except "customizing" for unique applications.

The effectiveness of our consultation service depends on the information you furnish. Be sure to tell us:

- The Model number and Series number from the blue and white label.
- The date of purchase.
- An exact description of the difficulty.
- Everything you have done in attempting to correct the problem.

Also include switch positions, connections to other units, operating procedures, voltage readings, and any other information you think might be helpful.

Please do not send parts for testing, unless this is specifically requested by our Consultants.

Hints: Telephone traffic is lightest at midweek — please be sure your Manual and notes are on hand when you call.

Heath/Zenith Computer and Electronics center facilities are also available for telephone or "walk-in" personal assistance.

REPAIR SERVICE

Service facilities are available, if they are needed, to repair your completed kit. (Kits that have been modified, soldered with paste flux or acid core solder, cannot be accepted for repair.)

If it is convenient, personally deliver your kit to a Heath/Zenith Computers and Electronics center. For warranty parts replacement, supply a copy of the invoice or sales slip.

If you prefer to ship your kit to the factory, attach a letter containing the following information directly to the unit:

- Your name and address.
- Date of purchase and invoice number.
- Copies of all correspondence relevant to the service of the kit.
- A brief description of the difficulty.
- Authorization to return your kit COD for the service and shipping charges. (This will reduce the possibility of delay.)

Check the equipment to see that all screws and parts are secured. (Do not include any wooden cabinets or color television picture tubes, as these are easily damaged in shipment. Do not include the kit Manual.) Place the equipment in a strong carton with at least THREE INCHES of *resilient* packing material (shredded paper, excelsior, etc.) on all sides. Use additional packing material where there are protrusions (control sticks, large knobs, etc.). If the unit weighs over 15 lbs., place this carton in another one with 3/4" of packing material between the two.

Seal the carton with reinforced gummed tape, tie it with a strong cord, and mark it "Fragile" on at least two sides. Remember, the carrier will not accept liability for shipping damage if the unit is insufficiently packed. Ship by prepaid express, United Parcel Service, or insured Parcel Post to:

Heath Company
Service Department
Benton Harbor, Michigan 49022

Heath Company
Benton Harbor, Michigan